

1   **WHAT IS CLAIMED IS:**

2           1 . A method for driving liquid crystal display devices involving the  
3   generation of  $N+1$  levels of output voltage ( $V_0 \sim V_N$ ), comprising the steps of:  
4           defining a minimum voltage as base voltage ( $V_0$ );  
5           defining a maximum voltage as high voltage ( $V_N$ );  
6           defining all voltage levels among voltage levels to-be-established  $V_1 \sim V_{N-1}$ ) other than the base voltage ( $V_0$ ) and the high voltage ( $V_N$ );  
7           generating any voltage level among voltage levels to-be-established ( $V_1 \sim V_{N-1}$ ) basing on using the high voltage( $V_N$ ), and then defining a new voltage as  
8   an established voltage level;  
9           generating any voltage level among voltage levels to-be-established ( $V_1 \sim V_{N-1}$ ) basing on the base voltage ( $V_0$ ), the high voltage( $V_N$ ), and all previously  
10   established voltage levels, and then defining the new voltage as an established  
11   voltage level;  
12           wherein,  
13           the established voltage level is always used as the base voltage for  
14   establishing the next voltage in voltage levels to-be-established ( $V_1 \sim V_{N-1}$ );  
15           the voltage difference  $dV$  between any two adjacent voltage levels is  
16   always a constant value, from the base voltage to the  $\frac{N+1}{2}-1$  th voltage level,  
17   and from  $\frac{N+1}{2}$  th voltage level to the high voltage ( $V_N$ ).

18           2. The method for driving liquid crystal display devices as claimed in  
19   claim 1, wherein all the established voltage levels are totaled up to six ( $N+1=6$ );  
20   the voltage levels  $V_0 \sim V_5$  are arranged in order from the lowest to the highest;  
21  
22  
23

1 and the voltage difference  $dV$  between any two adjacent voltage levels shall  
2 satisfy the conditions:  $V5 - V4 = V4 - V3 = V2 - V1 = V1 - V0 = dV$ .

3 3. The method for driving liquid crystal display devices as claimed in  
4 claim 2, wherein when the base voltage ( $V0$ ) has a zero value:

5 the second voltage ( $V2$ ) is obtained from the high voltage ( $V5$ );

6 the first voltage ( $V1$ ) is obtained by having the second voltage ( $V2$ )  
7 divided by two;

8 the fourth voltage ( $V4$ ) is obtained by having the high voltage ( $V5$ )  
9 subtracted by the first voltage ( $V1$ ); and

10 the third voltage ( $V3$ ) is obtained by having the high voltage ( $V5$ )  
11 subtracted by the second voltage ( $V2$ ).

12 4. The method for driving liquid crystal display devices as claimed in  
13 claim 2, wherein when the base voltage ( $V0$ ) has a zero value:

14 the first voltage ( $V1$ ) is obtained from the high voltage ( $V5$ );

15 the second voltage ( $V2$ ) is obtained by having the first voltage ( $V1$ )  
16 multiplied by two;

17 the fourth voltage ( $V4$ ) is obtained by having the high voltage ( $V5$ )  
18 subtracted by the first voltage ( $V1$ ); and

19 the third voltage ( $V3$ ) is obtained by having the high voltage ( $V5$ )  
20 subtracted by the second voltage ( $V2$ ).

21 5. The method for driving liquid crystal display devices as claimed in  
22 claim 2, wherein when the base voltage ( $V0$ ) has a zero value;

23 the third voltage ( $V3$ ) is obtained from the high voltage ( $V5$ );

24 the second voltage ( $V2$ ) is obtained by having the high voltage ( $V5$ )

1     subtracted by the third voltage (V3);  
2             the first voltage (V1) is obtained by having the second voltage (V2)  
3     divided by two; and  
4             the fourth voltage (V4) is obtained by having the high voltage (V5)  
5     subtracted by the first voltage (V1).  
6             6. The method for driving liquid crystal display devices as claimed in  
7     claim 2, wherein when the base voltage (V0) has a zero value:  
8             the fourth voltage (V4) is obtained from the high voltage(V5);  
9             the first voltage (V1) is obtained by having the high voltage (V5)  
10     subtracted by the fourth voltage (V4);  
11             the second voltage (V2) is obtained by having the first voltage (V1)  
12     multiplied by two; and  
13             the first voltage (V1) is obtained by having the high voltage (V5)  
14     subtracted by the second voltage (V2).